CLAIMS

1. Device (20; 120) for continuously measuring deformations in a tyre (1), which is mounted on a rim (5), during the travel movement of a motor vehicle, characterized in that it comprises at least one first emitter (7) of a first direct light beam (8), at least one first optical sensor (9) of the luminous intensity and at least one first reflecting element (13; 113) applied to a first portion (21) of an inner surface (4) of said tyre (1), said first emitter (7) being mounted on said rim (5) and being capable of sending said first direct light beam (8) towards said first reflecting element (13; 113), said first optical sensor (9) also being mounted on said rim (5) and being capable of receiving a first reflected light beam from said first reflecting element (13; 113), measuring a first prechosen physical parameter associated with said first reflected light beam and providing a signal representing the deformation affecting said tyre (1) along said first surface portion (21) during one revolution of said tyre (1).

2. Device (20; 120) according to Claim 1, characterized in that said first prechosen physical parameter consists of the luminous intensity of said first reflected light beam.

3. Device (20; 120) according to Claim 1, characterized in that it also comprises a second emitter (10) of a second direct light beam (11), a second optical sensor of the luminous intensity (12) and a second reflecting element (14) applied to a second portion (22) of said inner surface (4) of said tyre (1), situated in the vicinity of said first surface portion (21), said second emitter (10) being mounted on said rim (5) and being capable of sending said direct light beam (11) towards said second reflecting element (14), said second optical sensor (12) also being mounted on said rim (5) and being capable of receiving a second reflected light beam from said second reflecting element (14), measuring a second prechosen physical parameter associated

with said second reflected light beam and providing a signal representing the variation in distance which has occurred between said second surface portion (22) and said rim (5) during one revolution of said tyre (1).

4. Device (20; 120) according to Claim 3, characterized in that said second prechosen physical parameter consists of the luminous intensity of said second reflected light beam.

5. Device (20; 120) according to Claim 3, characterized in that said second prechosen physical parameter consists of the time which lapses between sending of said second direct light beam (11) and receiving of said second reflected light beam, said second direct light beam (11) having a given wavelength.

6. Device (20; 120) according to Claims 1 and 3, characterized in that said first and second optical sensors (9, 12) are operationally connected to processor means (15) capable of determining, by means of said deformation signal, a signal representing the displacement of at least one point on said first surface portion (21) in a predetermined direction, correcting said displacement signal depending on said variation-in-distance signal and providing an output signal for displacement of said at least one point in said predetermined direction, independent of said variation in distance.

7. Device (20; 120) according to Claim 6, characterized in that said processor means (15) are capable of providing, by means of said variation-in-distance signal, a measurement of the vertical compression of said tyre (1).

8. Motor vehicle wheel comprising a tyre (1) mounted on a rim (5), characterized in that it comprises, in turn, a device (20; 120) for continuously measuring deformations in said tyre (1) during the travel movement of said motor vehicle, said device (20) comprising at least one first emitter (7) of a first direct light beam (8), at least

one first optical sensor (9) of the luminous intensity and at least one first reflecting element (13; 113) applied to a first portion (21) of an inner surface (4) of said tyre (1), said first emitter (7) being mounted on said rim (5) and being capable of sending said first direct light beam (8) towards said first reflecting element (13; 113), said first optical sensor (9) also being mounted on said rim (5) and being capable of receiving a first reflected light beam from said first reflecting element (13; 113), measuring a prechosen physical parameter associated with said first reflected light beam and providing a first signal representing the deformation affecting the said tyre (1) along said first surface portion (21) during one revolution of said tyre (1).

9. Motor vehicle wheel according to Claim 8, characterized in that said device (20; 120) also comprises a second emitter (10) of a second direct light beam (11), a second optical sensor of the luminous intensity (12) and a second reflecting element (14) applied to a second portion (22) of said inner surface (4) of said tyre (1), situated in the vicinity of said first surface portion (21), said second emitter (10) being mounted on said rim (5) and being capable of sending said second direct light beam (11) towards said second reflecting element (14), said second optical sensor (12) also being mounted on said rim (5) and being capable of receiving a second reflected light beam from said second reflecting element (14), measuring a prechosen physical parameter associated with said second reflected light beam and providing a second signal representing the variation in distance which has occurred between said second surface portion (22) and said rim (5) during one revolution of said tyre (1).

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